

*Miss. Houston #46-V-M*

ISSUANCE TRANSMITTAL SHEET

ISSUANCE NUMBER:

MPD 8080.3

DATE:

October 9, 1967

MATERIAL TRANSMITTED

1. This is a new Saturn V Program Directive.
2. The purpose of this Directive is to establish requirements to  
(1) classify all tests and operations as either hazardous or nonhazardous; (2) prepare safe operating procedures for all hazardous tests and operations, and to provide criteria for identification of hazardous tests or operations.

FILING INSTRUCTIONS

All MSFC Issuances will be filed in a standard 3-ring binder in numeric sequence without regard to the alphabetic prefix which identifies the type of issuance.



MPD 8080.3

EFFECTIVE DATE:

October 9, 1967

## PROGRAM DIRECTIVE

PROGRAM AFFECTED: SATURN V

SUBJECT: HAZARDOUS TEST AND OPERATING PROCEDURES

SATURN V PROGRAM DIRECTIVE NUMBER: 46	REVISION NUMBER:
REVISION DATE:	
PREPARED BY: SATURN V TEST MANAGEMENT OFFICE (I-V-T)	
PHONE 876-6549/OFFORD	

### 1. PURPOSE

This Program Directive:

- a. Establishes requirements to
  - (1) Classify all tests and operations as either hazardous or nonhazardous.
  - (2) Prepare Safe Operating Procedures for all hazardous tests and operations.
- b. Provides criteria for identification of hazardous tests or operations.

### 2. DEFINITIONS

- a. A hazardous test or operation is one during which personnel error, procedural error, design deficiency, manufacturing error, equipment malfunction or failure, or environmental conditions could result in major equipment damage and/or serious injury to personnel.
- b. A Safe Operating Procedure (SOP) is a document which establishes the safety requirements for a specific test or operation. The SOP will list required support and safety equipment, assign responsibilities, designate applicable emergency procedures and give any additional safety instructions which are required to ensure safety of personnel and equipment during conduct of the test or operations. The SOP will be attached to the front of the test or operating procedure for which it is written.

### 3. SCOPE

This directive is applicable to MSFC Stage Contractors, Stage Managers, and all other MSFC elements responsible for preparation or review of procedures for Saturn V fabrication, assembly, test, post-manufacturing checkout, pre-firing checkout, captive (acceptance) firing, post-firing checkout and shipment.

4. REFERENCE

Air Force Manual 127-101, Chapter 7, Aerospace Safety Precautions, dated December 30, 1965.

5. POLICY

- a. All test and operating procedures shall be classified as hazardous or nonhazardous.
- b. An SOP shall be written for each test and operating procedure classified as hazardous (see Appendix A). Air Force Manual 127-101 and other broad safety standards and directives will be consulted to ensure full coverage of information essential to the prevention of accidents. Ref.
- c. All hazardous test and operating procedures and SOP's shall include all pertinent safety standards designed to protect life and property.

6. REQUIREMENTS

a. Procedure Preparation and Review

Contractors preparing or reviewing procedures shall ensure that the procedures fulfill the following safety requirements:

- (1) Identification of those steps in the procedure which require the employment of elements listed in the Safety Checklist, Paragraph 6.b. below, by a one-eighth inch wide black vertical bar in the right hand margin of each affected page of the written procedural documents.
- (2) Explicit, detailed description of the equipment, hardware, materials, operations, and actions necessary to fulfill the test requirements.
- (3) Careful examination of the compatibility of all sequences of events and simultaneous operations.
- (4) Establishment and definition of all test personnel capabilities and qualifications.
- (5) Environment and cleanliness requirements.
- (6) CAUTIONS shall be used to forewarn personnel of procedural steps that could result in damage or destruction to equipment.

6. REQUIREMENTS (Continued)

- (7) WARNINGS shall be used to forewarn personnel of procedural steps that could result in personnel injury or loss of life.
- (8) A listing of all safety and emergency equipment, including protective clothing and equipment, required by the test being conducted.
- (9) Emergency backout and shutdown procedures applicable to all hazardous steps of a test or operation.
- (10) Discussion of the following factors, which could contribute to the degree of hazard of a test or operation or which might cause a nonhazardous test or operation to become hazardous:
  - (a) Adverse weather conditions.
  - (b) Adjacent area hazards.
  - (c) Personnel fatigue.
  - (d) Physical limitations of personnel.
  - (e) Inadequate training.
  - (f) Change of test personnel.
  - (g) Remote control.
  - (h) Communications over systems other than direct voice.
  - (i) Automatic control.

b. Safety Checklist

A test or operating procedure which requires the handling of materials, performance of operations, or operations in environments listed in the following checklist shall be initially classified as hazardous by the procedure originator and verified by the reviewer. (Signature required)

- (1) Propellants.
- (2) Combustibles.
- (3) Toxic material.
- (4) Corrosive material.
- (5) Explosives.
- (6) High voltage or large current.
- (7) Electrically conductive fluids.
- (8) High pressure fluids.
- (9) Low pressure, large volume fluids.
- (10) Movement of heavy or large equipment.
- (11) Lifting of vehicle stages.

6. REQUIREMENTS (Continued)

- (12) Work at heights where danger of falling or danger due to falling equipment exists.
- (13) Ionizing radiation (alpha, beta, gamma, and x-ray).
- (14) Nonionizing radiation (high intensity white light, LASER's, MASER's, RF, infrared, ultraviolet, and plasma jets).
- (15) Human experimentation.
- (16) Hostile environments to test personnel or equipment:
  - (a) Oxygen rich or deficient atmosphere or abnormal composition.
  - (b) Unusual atmospheric pressure or change of pressure.
  - (c) Tank entry or work in confined spaces.
  - (d) High noise level or vibration.
  - (e) Abnormal heat or cold.
  - (f) Unusual velocity, acceleration, or deceleration of equipment or parts of equipment.
  - (g) Contaminated atmosphere (sand blasting, paint spray, chemicals, etc.).
  - (h) Unusual air velocities.

7. RESPONSIBILITIES

a. Stage Contractors shall:

- (1) Be responsible for safety during all contractor tests or operations at government facilities whether or not under government administrative control. Specify facility conditions required for safe conduct of tests and operations.
- (2) Ensure that procedures are revised or prepared in accordance with safety requirements defined in this directive.
- (3) Classify all procedures as either hazardous or nonhazardous. Prepare SOP's for all hazardous procedures (see Appendix A). ENC.
- (4) Prepare emergency backout or shutdown procedures for all hazardous test steps or operations within a hazardous procedure. Certify that emergency backout and shutdown procedures are adequate.

7. RESPONSIBILITIES (Continued)

- (5) Ensure adequacy and maturity of design of all contractor hardware and that all contractor hardware is manufactured within specification.
  - (6) Designate a Safety Officer who shall take necessary steps to ensure and certify (signature required) that:
    - (a) Each test and operating procedure contains full coverage of information essential for the prevention of accidents.
    - (b) Adequate SOP's are published, available, and properly used.
  - (7) Ensure that the Designated Safety Officer has reviewed, approved, and signed the test and operating procedure and SOP prior to use.
  - (8) Ensure that emergency equipment is adequate, operable, and properly placed.
  - (9) Ensure that test personnel are properly trained in emergency procedures.
  - (10) Ensure that the test conductor maintains communications with and control of all personnel participating in the test.
- b. MSFC Stage Managers shall:
- (1) Ensure that Contractors have contractual coverage and direction to implement this directive.
  - (2) Review procedures, monitor tests, and take action as required to ensure Contractor implementation of this directive.
- c. Saturn V Test Management Office, I-V-T, shall:
- Assess overall performance of Stage Managers in meeting responsibilities of Paragraph 7.b. above.

8. IMPLEMENTATION

- a. All government and contractor personnel from the highest through the lowest working level shall be responsible for implementing this directive.
- b. This directive shall be implemented immediately.



Arthur Rudolph  
Manager, Saturn V Program

1 Enc:  
Appendix A

Distribution:  
(See page 7)

Distribution for Action

MSFC

I-V-SIC, Mr. Urlaub (3)  
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I-E-T/E, Mr. Mitchell  
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R-P&VE-DIR, Dr. Lucas  
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OMSF

MAT, Mr. Day



APPENDIX A

COVER SHEET FORMAT FOR SAFE OPERATING PROCEDURES

Safe Operating Procedure for \_\_\_\_\_ (SUBJECT)

ORIGINATOR:

APPROVED FOR SAFETY:

\_\_\_\_\_  
Signature, typed: Name, organiza-  
tion title, and date.

\_\_\_\_\_  
Signature of Safety Officer and  
date.

APPROVED:

\_\_\_\_\_  
Signature of Test Supervisor  
and date.

# FORMAT FOR SAFE OPERATING PROCEDURES

SUBJECT: \_\_\_\_\_ DATE: \_\_\_\_\_

## Section I

### GENERAL

1. PURPOSE:  
(Describe in sufficient detail to identify accurately.)
2. SCOPE:  
(To what and to whom Safe Operating Procedure applies.)
3. POLICY:  
(Reference existing policy.)
4. DEFINITIONS:  
(Any terms used peculiar to this Safe Operating Procedure.)
5. LOCATION:  
(Give location of equipment or process in sufficient detail to allow determination as to safety.)

## Section II

### RESPONSIBILITIES

(Prime responsibility who and for what)  
(Subordinate responsibilities)

## Section III

### PERSONNEL REQUIREMENTS

(Itemized list of types of personnel required)

## Section IV

### EQUIPMENT REQUIREMENTS

(Itemized list of types of equipment required)

## Section V

### HAZARDS

(Description of hazards involved in operation. May be one, two, three or more of those listed:)

Explosion: Blast, fragments, heat.

Fire

Toxic

Heat

Cold

Radiation: Heat, light, x-ray, radioactive materials, laser.

Falls

Propelled or falling objects

Other (Describe)

(Material, process or operation giving rise to hazard should be fully explained.)

## Section VI

### PROCEDURE

Give step by step description of operations with special emphasis on those where hazards exist and precautions are to be taken. This may well be the countdown or operating procedure, or in some cases may be a procedure limited to less detail but including the essential "larger" steps of the procedure.